United States District Court,
S.D. California.

GTE WIRELESS, INC,
Plaintiff.
v.
QUALCOMM, INC,
Defendant.
Qualcomm, Inc,
Counterclaimant.
v.
GTE Wireless, Inc,
Counterclaim Defendant.

No. CIV. 99CV2173-B(CGA)

Feb. 14, 2002.

Owner of patent for cellular telephone preferred roaming list software sued competitor for infringement. On cross-motions for summary judgment, the District Court, Brewster, Senior District Judge, held that: (1) "home system identification code," called for in patent, was code of phone customer's carrier system in geographical area where phone was located when customer subscribed for service, and (2) accused phones used substantially different structure to perform frequency selection function called for in patent, and thus were not infringing.

Plaintiff's motion denied; defendant's motion granted.

4,916,728. Not Infringed.

W. Bryan Farney, James D. Smith, Daryl J. Adams, Brobeck, Phleger & Harrison, Austin, TX, for Plaintiffs.

Lloyd R. Day, Jr., James R. Batchelder, Day, Casebeer, Madrid & Batchelder LLP, Cupertino, CA, for Defendants.

ORDER DENYING GTE'S MOTION FOR SUMMARY JUDGMENT ON INFRINGEMENT; GRANTING QUALCOMM'S MOTION ON SUMMARY JUDGMENT OF NO INFRINGEMENT; DENYING ALL OTHER PENDING MOTIONS AS MOOT

BREWSTER**, Senior District Judge.**

The plaintiff, GTE, filed an action against Qualcomm, Inc., asserting the Qualcomm phones that incorporate the Preferred Roaming List software FN1 infringed the 4,916,728 patent ("728 patent"). Qualcomm counterclaimed seeking a declaratory judgment that its phones do not infringe the patent.

FN1. These phones can either be multi geo-region ("MGR") or single geo-region ("SGR").

GTE now moves for summary judgment asking the Court to hold that (1) the Qualcomm phones literally infringe claims 2, 6, and 7 of the 728 patent; (2) that Qualcomm has actively induced infringement; (3) that Qualcomm has engaged in contributory infringement; (4) that the claims of the patent are not anticipated; (5) that the claims are not obvious; (6) that the claims are not indefinite; (7) that GTE has not engaged in inequitable conduct; (8) that Qualcomm will not succeed on its laches defense; (9) and that Qualcomm will not succeed on its equitable estoppel defense.

Qualcomm seeks summary judgment that (1) its phones do not literally infringe the 728 patent; (2) that its phones do not infringe the 728 patent under the doctrine of equivalents; (3) that Qualcomm has not actively induced infringement; (4) that Qualcomm has not engaged in contributory infringement; and (5) that claim 2 of the 728 patent is anticipated.

The Court bifurcated the summary judgment motions to first consider the issues of literal infringement and infringement under the doctrine of equivalents and then, if necessary, to adjudicate the other claims in separate proceedings. After reading the briefs, meeting with attorneys and experts on various occasions, and hearing oral arguments from both sides, the Court finds that the Qualcomm phones, as a matter of law, do not infringe the 728 patent. FN2

FN2. Both sides have submitted formal objections to the use of expert testimony by the opposing party. The Court finds no evidentiary problems with using the testimony of any of the experts for purposes of this summary judgment motion. The testimony of Dr. Goldsmith and Dr. Rhyne, however, will not be used for purposes of how the Qualcomm phones work.

I. Background

A. 728 Patent

The 728 patent deals with technology that allows a cellular telephone to choose the best system on which to provide service. Cellular telephones are wireless telephones that transmit signals over radio frequencies to engage in two-way communication through a central radio station often referred to as a cell site or "base station." In any given geographical area, one or more companies, called service providers or carriers (e.g., AT & T, Sprint, Cingular, Verizon), maintain a cellular system, which includes many base stations, on which it provides cellular service to its customers. The Federal Communications Commission ("FCC") assigns a specific set of radio frequencies, called a frequency set, to a service provider for use in an assigned geographical location, referred to as a geographical region. The same frequency set may be assigned to different carriers in different geographical regions. For example, where the FCC may assign Verizon the A frequency Set, Cingular the B frequency set, and Sprint the C frequency set in the San Diego geographical region, the FCC may give Sprint the A frequency set, Verizon the B frequency set, and Cingular the C frequency set in the Los Angeles geographical region. As a result, in border areas (called overlapping coverage areas), a San Diego Sprint customer may search the "A" frequency set and find the Verizon system, which is transmitting on the same frequencies in the Los Angeles area.

On each frequency, the service provider broadcasts a unique system identification code ("SID") that allows the cellular telephone to determine which carrier is providing service on that frequency. The service provider's SID is called a "home SID;" a different carrier's SID is called a "nonhome SID;" and a SID that the phone has been programmed to exclude is called a "negative SID." A SID that is neither home nor negative is called a "nonhome, nonnegative SID."

A carrier will maximize its earnings when its customers use its system to make a phone call because it will incur a fee if its subscribers use another's system. For example, if a Sprint user uses the AT & T system to make a call, Sprint has to pay a fee to AT & T. As a result, system selection is an important problem in cellular telephone technology.

In July 1988, Kevin Blair filed the 728 patent as an attempt to solve this system selection problem by cellular telephones. The primary function of the patent is that a phone will scan frequencies and choose the frequency on which its home SID is broadcast, and if one is not available, choose a frequency that corresponds to a nonhome, nonnegative SID. The phone can provide service on a frequency that corresponds to a negative SID only if (1) frequencies corresponding to a home SID and a nonhome, nonnegative SID are unavailable and (2) the user dials a predetermined number (i.e., 911). This patent becomes particularly important in overlapping coverage areas when the phone can detect a competing carrier's system while searching its own frequency set. The patent teaches that even if the telephone of a San Diego Sprint customer finds a Verizon system while searching the A frequency set, the phone will reject the corresponding frequency until it has determined that no Sprint system is available.

Claims 2, 6 and & 7 of the patent are the only ones in dispute. Claim 2 states:

A cellular telephone unit including:

scanning means for sequentially monitoring a plurality of frequencies;

detection means for detecting any SID that is present on any said frequency that is monitored by said scanning means;

frequency selection means for selecting as a working frequency the frequency corresponding to a home SID if said home SID is detected by said detection means, and for selecting as a working frequency the frequency corresponding to a nonhome, nonnegative SID if such an SID is detected by said detection means and a home SID is not detected by said detection means.

Claim 6 states:

A cellular telephone unit comprising:

scanning means for sequentially monitoring a plurality of frequencies and for detecting any SID corresponding to any frequency;

frequency selection means for selecting a working frequency from among said plurality of frequencies;

frequency control means for controlling the selection by said frequency selection means of a working frequency;

said working frequency being a frequency corresponding to a home SID if said home SID is detected by said scanning means, and said working frequency being a frequency corresponding to a nonnegative SID if such an SID is detected by said scanning means and a home SID is not detected by said scanning means, and said working frequency being a frequency corresponding to a negative SID if:

(i) no home SID is detected by said scanning means, and

(ii) no nonnegative SID is detected by said scanning means, and

(iii) a user dials a predetermined number.

Claim 7 says a "cellular telephone unit as defined by claim 6 wherein the predetermined number is an emergency number." Claim 7 is dependent on claim 6.

B. The Accused Device: The Qualcomm Phones

Like the 728 patent, the Qualcomm phones try to improve the way a phone searches which cellular systems are available to use and which one ultimately to select. When a Qualcomm phone has been turned "off" and is turned back "on," it generates a register, called the initial scan list. An initial scan list consists of two parts: the top of the list contains the twelve most recently used frequencies and the second part comprises the rest of the frequencies everywhere for which the phone is programmed to scan. The phone searches (scans) for a SID on the frequency it most recently used (the first entry in the initial scan list), and if it cannot detect any SID on that frequency, it goes to the next most recently used, and so on, until it has tried all the frequencies in the initial scan list.

If the phone detects a SID ("initial SID") on one of the frequencies in the initial scan list, it determines whether the SID is listed in the phone's Preferred Roaming List ("PRL"). The PRL provides the SIDs of the systems all over the country which the service provider intends the phone to consider and the frequencies on which the service provider intends the phone to detect these SIDs. The PRL is broken down into smaller sets of SIDs programmed into the phone by the carrier, called geo-regions,FN3 which rank the SIDs in order of preference within each region. The carrier can program the PRL and, thus, decide how many geo-regions will exist in the PRL, the ranking of SIDs in each geo-region, and the sequence in which frequencies will be searched by the phone.

FN3. A geo-region is a particular geographical region within an assigned FCC geographical region determined by the carrier; the phone will search specific frequencies for particular SIDs depending on in which geo-region it believes it to be located. Unlike the geographical regions which are defined by the FCC, the geo-regions are programmed into the phone by the carrier. Five different geo-regions may exist in New York City or one may constitute the entire East Coast, depending on the preferences of the carrier.

If the initial SID is found in the PRL, the phone then checks the SID's preference ranking within the PRL geo-region. If it is the most preferred SID in that geographic region, the phone will choose the frequency associated with that SID as the "working frequency." If it is not the most preferred, the phone will identify all the SIDs in the geographic region that are more preferred than the initial SID and create a working list called an alternate scan list ("ASL"). The phone then tunes to the frequencies in the ASL associated with the most preferred SID and successively attempts to detect the SID on one of its frequencies. If the most preferred SID is detected, then that frequency is selected as the working frequency. If not, the phone searches the frequencies that correspond to the second most preferred SID in the particular region. If the second most preferred SID is detected, then that frequency is selected as the working frequency. If not, the phone continues the sequential process until all the entries in the ASL have been checked. If no more preferred SIDs have been found after searching all the frequencies in the ASL, the phone then reverts to using the initial SID. *See* 5/8/01 Steve Landauer Rept.; 10/12/01 Sorenson Decl. para.para. 12-20a.

A simple illustration provides an example of how the Qualcomm phone works.

Geo-Region	SID	Frequencies	Priority
San Diego	11	50, 75	More (Home SID)
Geo-Region			
	22	100, 125	More

	33	150, 175	More
	44	200, 225	More
Los Angeles	85	10	More
Geo-Region			
	95	20, 30	More
Santa Barbara	77	35, 45	More
Geo-Region			
	88	55, 66	Negative

When the Qualcomm phone is turned on, the phone will search the initial scan list beginning with the frequency it most recently used to try to locate a SID. Assume the phone searches frequency 150 because this was the last frequency the phone used and finds SID 33. Next, the phone determines where SID 33 is located in the PRL. In this case, the SID is located in the San Diego geo-region of the PRL. The telephone realizes it is not the most preferred SID in that region and creates an ASL that includes frequencies corresponding to the more preferred SIDs in the region. These are frequencies 50, 75, 100, and 125 which correspond to SIDs 11 and 22.

The Qualcomm phone searches for a more preferred SID, beginning with the first frequency. In this case, the phone searches frequency 50 and attempts to locate home SID 11. If it is unable to locate a SID on frequency 50, it will search frequency 75. If the phone has searched all the frequencies more preferred than the initial frequency, and has not found a SID, it will select the initial frequency (in this case, frequency 150 with SID 33) as the working frequency.

II. Discussion

A. Summary Judgment

Summary judgment is appropriate under Rule 56(c) of the Federal Rules of Civil Procedure where the moving party demonstrates the absence of a genuine issue of material fact and entitlement to judgment as a matter of law. *See* FED. R. CIV. P. 56(c); Celotex Corp. v. Catrett, 477 U.S. 317, 322, 106 S.Ct. 2548, 91 L.Ed.2d 265 (1986). A fact is material when, under the governing substantive law, it could affect the outcome of the case. *See* Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986); Freeman v. Arpaio, 125 F.3d 732, 735 (9th Cir.1997). A dispute about a material fact is genuine if "the evidence is such that a reasonable jury could return a verdict for the nonmoving party." Anderson, 477 U.S. at 248, 106 S.Ct. 2505.

B. Patent Infringement

[1] GTE seeks summary judgment that the Qualcomm phones literally infringe claims 2, 6, and 7 of the 728 patent. Qualcomm asks for summary judgment that its phones do not infringe the 728 patent, either literally or under the doctrine of equivalents. Infringement analysis involves a two-step process. First, the court determines the meaning and scope of the patent claims to be infringed. Second, the trier of fact determines whether the accused method or product infringes the asserted claim as properly construed. *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed.Cir.1995) (en banc), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (*Markman I*).

C. Step 1: Claim Construction

[2] [3] [4] The construction of patent claims is a legal determination, exclusively within the province of the

court. *See* Markman v. Westview Instruments, Inc., 517 U.S. 370, 391, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (*Markman II*). Claims are construedas one of ordinary skill would have understood them at the time of the invention. *See* Markman I, 52 F.3d at 986. Where a claim term has an ordinary and customary meaning in the art, that meaning generally controls the construction of the claim, unless the inventor intended that the terms be construed otherwise. *See* Johnson Worldwide Assocs. v. Zebco Corp., 175 F.3d 985, 989 (Fed.Cir.1999).

[5] [6] When construing the claims, the court should first look to the intrinsic evidence of record, which includes: 1) the patent itself, including the claims themselves; 2) the specification; and 3) the prosecution history. *See* Burke Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1339 (Fed.Cir.1999). "A court may refer to extrinsic evidence to educate itself about the invention and relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence." Karlin Tech. Inc. v. Surgical Dynamics, Inc., 177 F.3d 968, 971 (Fed.Cir.1999).

[7] [8] Because the claim limitations of claims 2 and 6 were written in means-plus-function format, these are subject to the requirements of 35 U.S.C. s. 112, para. 6. That provision states that claim limitations must "be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. s. 112, para. 6. As a result, a claim element written in means-plus-function format will have two parts: (1) a function and (2) a corresponding structure which performs the function. Structure is considered "corresponding" structure "only if the specification or prosecution history links or associates that structure to the function recited in the claim." *See* B. Braun Medical v. Abbott Laboratories, 124 F.3d 1419, 1425 (Fed.Cir.1997) ("The duty to link or associate structure to function is the quid pro quo for the convenience of employing s. 112, s. 6 ....").

After the Markman hearings, the parties stipulated to the claim construction of the patent. The Court, however, will examine a few of the remaining problems that involve interpretation of the patent's claims and scope.

(1). Corresponding Structure to the Frequency Selection Means Limitation of Claim 2 and the Frequency Selection Control Means Limitation of Claim 6

The main dispute between the parties is whether the Qualcomm phones perform the frequency selection means limitation of claim 2 and the frequency selection control means limitation of claim 6. The parties stipulated the corresponding structure to these claim elements is a "programmable logic circuit operating in accordance with the searching algorithms disclosed in the specification." *See Jury Instruction on Claim Construction* (Apr. 11, 2001). Both sides agree the structure includes a programmable logic circuit. The dispute is what constitutes the "searching algorithms disclosed in the specification." GTE maintains seven different algorithms disclosed in the specification correspond to the frequency selection means of claims 2 and the frequency selection control means of claim 6:

(1) The algorithm disclosed by the means responsive element of claim 1 that teaches the phone to search a plurality of frequencies for a frequency corresponding to a home SID, and if no frequency is available, searching for a frequency corresponding to a nonnegative SID.

(2) The algorithm disclosed in the frequency selection means element of claim 2 that requires the phone to select a frequency corresponding to a home SID if available, then a frequency corresponding to a nonhome, nonnegative SID.

(3) The algorithm disclosed in the frequency selection control means of claim 6 that requires the phone to select a frequency corresponding to a home SID if available, then a frequency corresponding to a

nonnegative SID.

(4) The algorithm disclosed in Column 2 of the patent which requires the phone to search for a frequency corresponding to a home SID, then a frequency corresponding to a SID "not on an exclusion list.... A 911 override is provided to allow dialing of emergency numbers no matter what the home-SID status."

(5) The mixed-depth-first-then-breadth ("mixed") algorithm disclosed in column 5 of the patent that requires the phone to "scan all the home frequencies first, then all nonhome frequencies, but to acquire or lock onto the frequency of the home system, if available, otherwise, the frequency corresponding to the first nonnegative SID found." More specifically, this algorithm teaches the phone to scan (1) the home frequency set for a home SID, (2) then the home frequency set for a nonnegative SID, (3) then the nonhome frequency set for a home SID, and finally (4) the nonhome frequency set for a nonnegative SID.

(6) The breadth-first ("breadth") algorithm disclosed in column 5 of the patent that requires the phone to "scan both home frequencies and nonhome frequencies in search of a home SID, then to rescan in search of any nonnegative SID." More specifically, this algorithm teaches the phone to scan the (1) home frequency set for a home SID, (2) then the nonhome frequency set for a home SID, (3) then the home frequency set for any nonnegative SID, (4) then the nonhome frequency set for a nonnegative SID.

(7) The depth-first ("depth") algorithm disclosed in column 5 of the patent that requires the phone to scan the (1) home frequencies for a home SID, (2) then rescan for a nonhome SID, (3) following which the nonhome frequencies are scanned for a nonnegative SID.

Qualcomm agrees with GTE that the mixed, breadth, and depth algorithms disclosed in column 5 of the patent constitute corresponding structure to the frequency selection means and frequency selection control means. Contrary to GTE's position, however, Qualcomm maintains the algorithms found in the claims and the algorithm in column 2 do not serve as corresponding structure to the function of the claim limitations. The Court agrees with Qualcomm.

A. The algorithms disclosed in claims 1, 2, & 6 of the patent

GTE argues the algorithms disclosed in claims 1, 2, and 6 constitute corresponding structure for the function of the frequency selection means and the frequency selection control means. GTE points out how the law states the corresponding structure must be described in the specification. *See* 35 U.S.C. s. 112, para. 6 ("[S]uch claim shall be construed to cover the corresponding structure, material, or acts described in the specification, and equivalents thereof."). According to GTE, since the claims are part of the specification, the corresponding structure can be described by the claims themselves. *See* 35 U.S.C. s. 112, para. 2 ("The specification shall conclude with one or more claims ...."). The algorithms in claims 1, 2, and 6, however, recite the function of the frequency selection means and frequency selection control means. Essentially, GTE attempts to persuade the Court that the corresponding structure to these claim limitations is a programmable logic circuit operating in accordance with any algorithm that performs its function.

[9] The case law, however, has consistently rejected GTE's position. GTE has failed to present, and the Court has not found, one case where a court has found *corresponding* structure in the claim limitations. Qualcomm correctly points out how the case law requires the corresponding structure of a claim must be disclosed in the *written description portion of the specification,* not the claims. *See* Kemco Sales v. Control Papers Co., 208 F.3d 1352, 1360 (Fed.Cir.2000) ("Once a court establishes a means-plus-function limitation is at issue, it must construe that limitation, thereby determining what the claimed function is and what structures disclosed in the written description correspond to the 'means' for performing that function."); Atmel Corp. v. Information Storage Devices, 198 F.3d 1374, 1381-82 (Fed.Cir.1999) ("The language indicates that means-plus-function clauses comprise not only the language of the claims, but also the

structure corresponding to that means that is disclosed in the written description portion of the specification."); State Street Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1372 (Fed.Cir.1998) ("Each claim component, recited as a "means" plus function, is to be read, of course, pursuant to 112, 6 as inclusive of the 'equivalents' of the structures disclosed in the written description portion of the specification."); Unidynamics Corp. v. Automatic Prods. Int'l, 157 F.3d 1311, 1319 (Fed.Cir.1998) ("The proper construction of a means-plus-function limitation requires interpreting the limitation in light of the corresponding structure, material or acts described in the written description, and equivalents thereof, to the extent that the written description provides such disclosure.").

Two additional cases show why GTE's position that the corresponding structure for a claim limitation can be found in the functional language must fail. The federal circuit case, WMS Gaming, Inc. v. International Game Tech., 184 F.3d 1339 (Fed.Cir.1999), involved a patent over a slot machine that was able to decrease the odds of winning without changing the slot machine's external appearance. A disputed claim limitation involved a means for assigning a plurality of numbers to stop positions, where the plurality of numbers exceeds the number of stop positions and some positions are represented by more than one number. The claim limitation provides a "means for assigning a plurality of numbers representing said angular positions of said reel, said plurality of numbers exceeding said predetermined number of radial positions such that some rotational positions are represented by a plurality of numbers ...." Id. at 1346-47. The district court held the corresponding structure for the "means for assigning limitation" was any "algorithm executed by a computer." Id. at 1348.

Overturning the district court, the Federal Circuit held the corresponding structure was too broad and found the lower court "erred by failing to limit the claim to the algorithm disclosed in the specification." *Id*. The court, however, did not find the corresponding algorithm in the claims, but in Figure 6, which illustrated a plurality of single numbers are assigned to stop positions such that (1) the range of single numbers exceeds the number of stop positions; (2) each single number is assigned to only one stop position; (3) each stop position is assigned at least one single number; and (4) at least one stop position is assigned more than one single number. *See id*. The Federal Circuit concluded the corresponding structure was the algorithm disclosed in the *written description portion of the specification,* not the claims.

Furthermore, in Itron, Inc. v. Benghiat, 169 F.Supp.2d 1073 (D.Minn.2001), the court rejected the same argument GTE presents here. In *Itron,* the court had to determine whether Itron's hand-held meter reading devices infringed Benghiat's patent. Similar to GTE's request in this case, Benghiat asked the court to "construe the disclosed structure [of claim 1] as a microprocessor programmed to carry out the algorithm recited in each of the claims." *Id*. at 1090. The disclosed algorithm in claim 1 stated:

Compare each character keyed in by the operator to a list of associated routines or function codes.

If the character is the search miss request code, activate the search miss routine as follows:

(a) Start the search miss routine at the current meter;

(b) Search each meter record sequentially in the direction of the specified for missed reading (e.g., no current reading data); and

(c) Stop searching and display the first meter encountered.

Although the algorithm described in claim 1 of Benghiat's patent was more detailed and specific than the algorithm described in the claims of the 728 patent, the district court refused to find it constituted corresponding structure. *See* id. at 1090-91. The court concluded by noting that "in light of Benghiat's explicit disclosure of the algorithms for performing the various functions in the patent claims, the Court

finds that the claims are limited to the particular flowcharts." Id. at 1091. In both *WMS Gaming* and *Itron,* the courts refused to find the claim limitations were computers programmed to carry out algorithms that performed the functions of the claims; instead, both courts found the corresponding structure was the algorithms described in the written description portion of the specification.

The cases GTE relies upon do not help its argument. GTE cites Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1536 (Fed.Cir.1991) for the proposition that "the recitation of some structure in a means plus function element does not preclude the applicability of section 112(6)." In that case, the court found one of the means-plus-function elements contained significant structural language. *See id.* at 1535-36. The court, however, held the structure in the claim was not *corresponding* structure, but helped "specify further the function." *Id.* at 1536. The court looked to the written description portion of the specification to find the corresponding structure for the means-plus-function limitation. *See id.* at 1536-37. Furthermore, although the court in Unidynamics Corp. v. Automatic Prods. Int'l, 157 F.3d 1311, 1319 (Fed.Cir.1998), found structural language in the claims, the corresponding structure was found in the written description portion of the specification.

The Court finds the algorithms disclosed in claims 1, 2, and 6 of the claims do not constitute corresponding structure to the frequency selection means of claim 2 and the frequency selection control means of claim 6.

B. The algorithm disclosed in the Summary of the Invention

GTE also asserts the algorithm disclosed in the "Summary of the Invention" found in column 2 of the patent constitutes corresponding structure to the frequency selection means of claim 2 and the frequency control means of claim 6. 728 patent, Column 2:23-31. Qualcomm, on the other hand, contends the Summary of the Invention is merely a summary of the mixed, breadth, and depth algorithms specifically described in the specification.

[10] The algorithm in column 2 summarizes the specific algorithms disclosed in the patent and, thus, does not constitute corresponding structure. This paragraph in column 2 is not mentioned anywhere else in the patent and does not link or correspond to the frequency selection means of claim 2 or the frequency selection control means of claim 6. *See* B. Braun Medical, 124 F.3d at 1419 (holding that structure of a claim limitation must link or associate with the function). Where the frequency selection means of claim 2 requires the phone to search for a nonhome, nonnegative SID if a home SID is unavailable, the summary of the invention teaches the phone to search for a SID not on the exclusion list if a home SID is unavailable. Also, this algorithm does not correspond to the function of the frequency selection control means of claim 6. The lockout override of claim 6 allows selection of a frequency corresponding to a negative SID only after the phone has first searched for a frequency corresponding to a home and nonhome, nonnegative SID. The lock-out override in Column 2, however, allows the dialing of "emergency numbers no matter what the home-SID status." 728 patent, Column 2:30-31.

Both parties agree the mixed, breadth, and depth algorithms constitute corresponding structure. Because the Court finds no other corresponding algorithms in the written description portion of the specification, these three algorithms serve as the corresponding structure to the frequency selection means of claim 2 and the frequency selection control means of claim 6.

The Court, however, needs to clarify which frequencies the three 728 algorithms require the phone to search. The mixed-algorithm states the phone will search "all" the home and nonhome frequencies. The breadth and depth algorithms teach the phone to search the home frequencies then the nonhome frequencies. *See* 728 patent, Column 5; 4-29. Similar to the Court's ruling on a "plurality of frequencies," these three algorithms do not require the phone to search the entire home frequency set, or the entire nonhome frequency set, but merely all the home and nonhome frequencies that the cellular phone has been

programmed to scan for in *any* geographical region. *See Jury Instruction on Claim Construction* (Apr. 11, 2001). Contrary to GTE's assertions, however, none of these three algorithms allow searching different frequencies in different areas and, thus, the algorithms of the 728 patent require the phone to search the same frequencies every time the phone is activated, irrespective of the location of the phone. If the 728 algorithms allowed searching different frequencies at different times, the algorithms would not say search "all" the home and nonhome frequencies or "the" home and nonhome frequencies, but would require the phone to search the frequencies for which the phone is programmed to scan in a *particular geographical area*.

(2). Definition of Home SID and Home Frequency Set

[11] [12] The parties also dispute the definition of "home SID" and "home frequency set" although they stipulated that a home SID was defined as "[a] SID associated with the subscriber's wireless system in the geographical area in which the mobile station subscribes for service." *See Jury Instruction on Claim Construction* (Apr. 11, 2001). GTE maintains a home SID is any SID of the subscriber's wireless system in the geographical area *for which* the user subscribed for service. For example, if a Verizon customer bought a phone in San Diego and subscribed for service for San Diego, New York City, and Chicago, the telephone would have three home SIDs (the Verizon San Diego SID, the Verizon New York City SID, and the Verizon Chicago SID). This definition, however, is incorrect. The use of the term "in which" clearly means the home SID will be the SID of the customer's carrier system in the geographical area where the phone was located when it subscribed for service. Similarly, the home frequency set constitutes the frequencies of the customer's service provider assigned by the FCC in the geographical area where the telephone is located when it subscribes for service. Using the example above, the Verizon user who bought the phone in San Diego and subscribed for service in other cities across the country will have only 1 home SID (the San Diego Verizon SID) and 1 home frequency set.FN4

FN4. Except in the situations where the user has a home SID on the digital frequency set and a home SID on the analog frequency set. *See* infra, for more information.

GTE supports its interpretation of home SID by contending that because in some places the patent uses the terms "a home SID," it implies more than 1 home SID can exist. However, elsewhere in the patent, it says the phone will select "the home system" rather than "a home system." 728 patent; Column 5:12. And even if the terms used in the patent imply more than 1 home SID exists, this may simply mean the cellular telephone has more than 1 home SID in the geographical area where the phone was located when the customer subscribed for service, *not another home SID in a different geographical region*. For example, a cellular telephone that operates on analog and digital technology may have a home SID on the digital frequency set and another home SID on the analog frequency set, although both home SIDs are in the geographical in which the phone subscribed for service.FN5

FN5. Although the Court holds that only 1 home SID exists for each geographical area, this legal determination does not affect the outcome of the case. This is explained below.

D. Step 2: Infringement Analysis

(1). Literal Infringement

[13] [14] After properly interpreting the claims of the patent, the Court must compare the construed claims against the accused device and determine whether judgment as a matter of law is appropriate. To show literal infringement of a means-plus-function claim, GTE must show the Qualcomm phones (1) perform the identical "function" recited in the claim limitation and (2) contain a "structure" that is the same as or

equivalent to a structure disclosed in the patent specification for performing the function recited in that claim limitation. *See* 35 U.S.C. s. 112 para. 6; Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed.Cir.1987). Although whether the properly construed claims cover the accused device, either literally or under the doctrine of equivalents, is a question of fact, summary judgment of noninfringement is appropriate when, drawing all reasonable inferences in favor of the patentee, no reasonable jury could find that every limitation of the construed claim exists in the accused device. *See* Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986); Netword, LLC v. Centraal Corp., 242 F.3d 1347, 1353 (Fed.Cir.2001). The crux of this patent case is whether the Qualcomm phones literally infringe the frequency selection means limitation of claim 2 and/or the frequency selection means limitation of claim 6.

A. Functional Identity

The function of the frequency selection means limitation of claim 2 teaches the phone to direct the scanning means and detection means to monitor frequencies and select as a working frequency a frequency corresponding to a home SID if available, and if not, then a frequency corresponding to a nonhome, nonnegative SID. The function of the frequency selectioncontrol means of claim 6 is similar, but requires the phone to search for a frequency corresponding to any nonnegative SID if a frequency corresponding to the home SID is not available. The Qualcomm phones perform the identical function of both of these claim limitations.

[15] Usually, carriers who use Qualcomm phones will program the PRL so that the home SID will be the most preferred SID in any particular geo-region where it is listed, followed by nonhome, nonnegative SIDs, followed by negative SIDs. Assume a Qualcomm phone finds a SID which is located in the same PRL geo-region as the phone's home SID. In this case, once the Qualcomm phone finds the SID in the PRL, it will search for a home SID if available, then a nonhome, nonnegative SID, then a negative SID, identical to the function of the frequency selection means and the frequency selection control means. Although the Qualcomm phones may not always perform the functions of the claim limitations, Qualcomm has conceded that if an accused product performs the function of a claim limitation some of the time, it performs the identical function for purposes of infringement analysis. *See* Qualcomm's Opp., at 13.

B. Structural Equivalence

[16] To literally infringe a claim limitation, the Qualcomm phone not only has to perform the same function, but also has to contain the same or equivalent structure. Two structures are equivalent under s. 112, para. 6 if the differences between the disclosed structure and the accused structure are insubstantial. *See* Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., 145 F.3d 1303, 1308 (Fed.Cir.1998). The test for insubstantial differences under s. 112, para. 6 is similar to the "function, way, result" test under the doctrine of equivalents. *See Al-* Site Corp. v. VSI Int'l, 174 F.3d 1308, 1321 (Fed.Cir.1999). "Under a modified version of the function-way-result methodology ... two structures may be 'equivalent' for purposes of 35 U.S.C. section 112, paragraph 6 if they perform the identical function, in substantially the same way, with substantially the same result." Kemco Sales, Inc. v. Control Papers, Co., 208 F.3d 1352, 1364 (Fed.Cir.2000). Thus, "[t]he content of the test for insubstantial differences under s. 112, para. 6 reduces to 'way' and 'result.' " Odetics, Inc. v. Storage Tech. Corp., 185 F.3d 1259, 1267 (Fed.Cir.1999). Structural equivalence under s. 112, para. 6 is therefore "an application of the doctrine of equivalents in a restrictive role." Warner-Jenkinson Co., Inc. v. Hilton Davis Chem., 520 U.S. 17, 28, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1997).

Because no jury could find the differences between the structure of the accused device and that disclosed in the specification are insubstantial, the Court finds, as a matter of law, the Qualcomm phones do not literally infringe the 728 patent. The way the algorithms of the Qualcomm phones perform the frequency selection means function of claim 2 and the frequency selection control means function of claim 6 is substantially

different from the way the 728 algorithms teach a phone to perform those functions.

(1). *Frequencies searched*

[17] The way the algorithms disclosed in the patent teach the phone to perform the function of the frequency selection means and the frequency selection control means is by searching the home frequency set first for a home SID and then eventually the nonhome frequency sets. *See* 728 Patent, Column 5:4-29 (mixed-algorithm: "scan all home frequencies first ..."; breadth algorithm: "scan both home frequencies and nonhome frequencies ..."; depth algorithm: "scan home frequencies for a home SID ..."). These algorithms, however, do not provide any method for allowing the phone to determine its location; as a result, the 728 patent requires the phone to search the *same frequencies* every time it is turned on and to look for a home SID.

A simple illustration will help explain. Assume the FCC assigns Verizon frequencies 25, 50, 75, 100, 125 and SID 111 in San Diego and frequencies 200, 300, 400, and 500 and SID 222 in New York City. Assume the home SID of a Verizon customer's telephone is 111 and it is programmed to scan the following frequencies from its home frequency set-25, 50, 75, 100-and the following frequencies from its nonhome frequency set-150, 175, 200. The algorithms require the phone to search its home frequencies first; as a result, the phone searches these four frequencies from its home frequency set for SID 111, followed by its nonhome frequencies for which it is programmed to scan, no matter where it is located. Thus, if a phone is in San Diego, the 728 algorithms will teach it to search frequencies 25, 50, 75, and 100, followed by 150, 175, and 200. Furthermore, if the phone is in New York City, *it will also begin by searching frequencies 25, 50, 75, 100 and search for home SID 111,* followed by nonhome frequencies 150, 175, and 200. As a result, in this case, a caller using the 728 algorithms most likely would not find any SID in New York City because it is searching on the wrong frequencies.

The Qualcomm phone algorithms, however, provide for a completely different way of performing the frequency selection means function of claim 2 and the frequency selection control means function of claim 6. Instead of blindly searching the same home and nonhome frequencies every time, the Qualcomm phone will find a SID in a particular geo-region of the PRL close to the location of the phone, create an alternate scan list, and then search the frequencies that correspond to the most preferred SID in that particular region. Unlike the algorithms in the 728 patent, the Qualcomm algorithms direct the phones to search *different frequencies depending on where it believes it is located*. Using the example above, the Qualcomm phone will begin searching frequencies 25, 50, 75, and 100 when the phone believes it is in San Diego, but will begin searching frequencies 200, 300, 400 and 500 when it is in New York City. No reasonable jury could find this difference in way and result insubstantial: where the 728 algorithms do not provide any practical method for searching for SIDs outside its home geographical region, the Qualcomm algorithms provide its customers a quick and efficient method for finding the most preferred SID in any geographical region in the country.

Also, a Qualcomm phone would perform the frequency selection means and frequency selection control means in a substantially different way, with substantially different results even if the 728 patent allowed for multiple home SIDs. In this case, if a customer subscribed for service in San Diego, Los Angeles, and San Francisco, the phone would have three home SIDs and three home frequency sets (let us assume each set has five frequencies which are activated and for which the phone is programmed to scan).

HOME SID	HOME FREQ SET	LOCATION
111	25, 50, 75, 100, 125	San Diego
222	200, 225, 250, 275, 300	Los Angeles
333	400, 425, 450, 475, 500	San Francisco

In this situation, the phone would have 15 home frequencies (25, 50 ... 500). If the patent would allow for multiple home SIDs, the 728 algorithms would require the phone to search *all* 15 home frequencies in search of a home SID, no matter where it was located (i.e., San Diego, Los Angeles, San Francisco or outside of California). *See* 728 Patent, Column 5:4-29 (mixed-algorithm: "scan all home frequencies ..."; breadth algorithm: "scan both home frequencies and nonhome frequencies ..."; depth algorithm: "scan home frequencies for a home SID ..."). GTE's expert, James Modestino, conceded this point. *See* Modestino Deposition, 6/22/01; 353:7-13.

Instead of blindly searching all 15 home frequencies, the Qualcomm phone will search the frequencies that correspond to the most preferred SID in the particular geo-region where it believes it to be located. It may search some of the home frequencies; it may search none. For example, if the phone believed it to be in New York City, it likely would not search any of these home frequencies, contrary to the teachings of the 728 patent. As a result, even if the 728 patent allowed for multiple home SIDs (which it does not), no reasonable jury could find the difference between the way the 728 algorithms perform the claims limitations and the way the Qualcomm phones perform these functions insubstantial.

(2). ***Does not search for a home SID***

[18] The way the 728 algorithms perform the frequency selection means of claim 2 and the frequency selection control means of claim 6 is by first searching for a frequency that corresponds to a home SID. The Qualcomm algorithms, however, never direct the phone to search for a frequency that corresponds to a home SID, but commands the phone to search for a frequency that corresponds to the *most preferred SID* in the particular geographical region in which the phone believes it is operating. Depending on where the phone is located, the most preferred SID may, coincidentally, be (1) the home SID, (2) the SID of another carrier (nonhome, nonnegative SID), or (3) the SID of the same carrier, but not the home SID ("owned SID"). For example, assume the following PRL for a Verizon phone:

Geo-Region	SID	Frequencies	SID Status	Carrier
San Diego	111	25, 50	Home	Verizon
	199	60, 65	Nonhome	Sprint
New York City	222	75, 100	Owned	Verizon
	333	125, 150	Nonhome	Cingular
Miami	444	25, 50	Nonhome	Cingular
	555	300, 350	Nonhome	Sprint

In this case, the home SID is 111 and the home frequency set is 25 and 50. The 728 algorithms will always direct the phone to first search for home SID 111, no matter where it is located. The Qualcomm phones, however, act differently. For example, when the Qualcomm phone believes it is located in New York, it will not try to locate a frequency that corresponds to the home SID (SID 111), but will try to detect the frequency that corresponds to the Verizon owned SID (SID 222). Furthermore, when the phone is in Miami, it will first attempt to locate a frequency that corresponds to a nonhome, nonnegative SID,FN6 even though it searches the home frequencies (25, 50). This creates a substantial difference in way: where the 728 algorithms perform the claim limitations by always teaching the phone to begin searching for a home SID, the Qualcomm algorithms will search for the most preferred SID, which may or may not be the home SID.

FN6. This assumes no Verizon system exists in the Miami geo-region.

(3). ***Prioritizing between nonhome, nonnegative SIDs***

[19] The way the 728 algorithms perform the frequency selection means of claim 2 and the frequency selection control means of claim 6 is by directing the phone to select the first nonhome, nonnegative SID found if no home SID is available. *See* 728 patent, Column 5:4-29. The Qualcomm algorithms, however, will not select the first nonhome, nonnegative SID found if it is not the most preferred nonhome SID in the particular PRL geo-region.FN7 This difference, by itself, shows that, as a matter of law, the Qualcomm phone performs the frequency selection means in a substantially different way, with substantially different results. An example will show how this occurs:

FN7. GTE argues that the patent does not teach selecting the first nonhome, nonnegative SID. This argument fails. Not only do the 728 algorithms require this, but claim 2 teaches the phone to "select as a working frequency the frequency corresponding to a nonhome, nonnegative SID if such SID is detected." This sentence means the phone will select the first nonhome, nonnegative SID if it is detected after determining no home SID is available.

SID	FREQ	PRIORITY
111 (Home)	25, 50	MORE
222 (Nonhome)	75, 100	MORE
333 (Nonhome)	125, 150	MORE
444 (Nonhome)	75, 200	MORE
555 (Negative)	225, 250	MORE

While searching frequency 125 in the initial scan list, the Qualcomm phone finds SID 333, a nonhome, nonnegative SID. The phone then creates an alternate scan list that consists of frequencies 25, 50, 75, and 100. Failing to find any SID on frequencies 25 and 50, the phone searches frequency 75 and instead of finding SID 222, finds SID 444. Because SID 444 is lower ranked than the initial SID (SID 333), the Qualcomm phone will reject it and continue searching on frequency 100. If the phone finds SID 222, it will accept it as the working frequency; if not, it will use SID 333. Although the 728 algorithms would require a phone to accept SID 444 because it is the first nonhome, nonnegative SID found after the phone determined the home SID was unavailable, the Qualcomm phone will reject it and use a more preferred nonhome, nonnegative SID (either SID 222 or 333). A Qualcomm phone can reject a nonhome, nonnegative SID in favor of a more preferred one in any overlapping coverage area where two nonhome SIDs are on the same frequency and the phone detects a nonhome, nonnegative SID less preferred than the initial SID.FN8

FN8. Overlapping coverage areas occur frequently. GTE concedes that the selection of a SID in a "border region between adjoining cellular systems was one of the principal aspects of the 728 patent." GTE, Reply, 7. *See* 11/1/01 Andrea Goldsmith Declaration para. 9 ("In cities, cellular coverage areas typically cover only a few blocks, so coverage overlap is more the rule than the exception. Even in less urban settings, it is extremely common for cell phones to experience coverage overlap.").

No reasonable jury could find this difference insubstantial. By prioritizing between nonhome, nonnegative SIDs, carriers using the Qualcomm phones have the flexibility to create favorable billing agreements with different carriers. Where the 728 patent will direct the phone to take the first nonnegative SID, the Qualcomm algorithm will require the phone to use the cheapest nonhome, nonnegative SID, resulting in substantial savings for the carrier, customer, or both.

GTE maintains that in this case SID 444 is not a nonhome, nonnegative SID, but rather a temporary negative SID because it is disfavored. This argument fails and raises a legal issue regarding the meaning of the term "negative." The Court has defined "negative SID" to mean a SID of an "excluded or disfavored system." *See Jury Instruction on Claim Construction* (Apr. 11, 2001). As Qualcomm notes, however, the patent provides helpful instruction in determining the meaning of a "disfavored system." The patent states, "[t]he logic circuitry 14 is programmed to seek to avoid (*except in emergencies*) 'negative' SIDs on a preprogrammed list of such SIDs." 728 patent, Column 4:29-36 (emphasis added). Figure 5 and Claim 6 provide examples, however, of a negative SID being "disfavored" rather than "excluded," such that a negative SID can be selected after the phone has determined a home and a nonhome, nonnegative SID does not exist, but only for emergency phone calls. As Qualcomm correctly points out, both passages show that in non-emergency situations, a negative SID will be *excluded,* or will never be selected because the phone is programmed to avoid negative SIDs. But, in emergency situations, a negative SID can be *disfavored* (or chosen after the phone has searched for a home SID or a nonhome, nonnegative SID) rather than excluded. As a result, a disfavored SID applies only to emergency situations; a less preferred nonhome, nonnegative SID is not disfavored and, thus, not negative.

(4). *Rejects a Home SID in favor of a Nonhome SID*

Finally, the way the 728 algorithms direct the phone to perform the frequency selection means is to select the first home SID available. *See* 728 patent, Column 5:4-29. The Qualcomm algorithms, however, can direct its phones to detect a home SID, reject it, and consequently select a frequency corresponding to a nonhome, nonnegative SID as the working frequency. Although this rarely occurs, it can happen anytime the phone is in an overlapping PRL geo-region with the home SID in one of the geo-regions. For example, assume a Qualcomm phone using the SGR algorithm searched a frequency in the ASL for a nonhome, nonnegative SID and found the home SID which was in another geo-region of the PRL. Although the phone detected the home SID, it will reject it because it is not in the same geo-region as the initial SID. The phone continues searching on the next frequency in the ASL and selects a frequency that corresponds to a nonhome, nonnegative SID. In this case, the phone detected a home SID, rejected it, and selected a nonhome, nonnegative SID, contrary to the teachings of the patent algorithms. Because this situation could occur in only rare instances, this difference, by itself, is insubstantial; however, it does provide another example of the differences in way and result between the structure of the 728 patent and that of the Qualcomm phones.

No reasonable jury could conclude the 728 algorithms perform the function of frequency selection means of claim 2 and the frequency selection means of claim 6 in substantially the same way with substantially the same results as the Qualcomm algorithms perform these same functions. Accordingly, the Court finds as a matter of law the differences are not insubstantial and that the Qualcomm phones do not literally infringe claims 2 and 6 of the 728 patent. Because claim 7 is dependent on claim 6, the Court also finds no infringement of claim 7.

2. Doctrine of Equivalents

[20] An accused device will infringe under the doctrine of equivalents if the product performs (1) substantially the same function in (2) substantially the same way to obtain (3) substantially the same result. *See* Read Corp. v. Portec, Inc., 970 F.2d 816, 822 (Fed.Cir.1992). "Because the "way" and "result" prongs are the same under both the 35 U.S.C. section 112, paragraph 6 and doctrine of equivalents tests, a structure failing the 35 U.S.C. section 112, paragraph 6 test under either or both prongs must fail the doctrine of equivalents test for the same reasons." Kemco Sales, Inc., 208 F.3d at 1364. Because Qualcomm has already shown that its phones do not perform the function of the claim in substantially the same way, the Court finds as a matter of law that the phones do not infringe under the doctrine of equivalents.

E. Other Arguments Why the Phones do not Infringe

Because the Court has held the Qualcomm phones do not infringe the 728 patent for the reasons stated above, it will not address Qualcomm's other arguments of noninfringement at this time.

III. Conclusions

It is hereby ordered that Qualcomm's motion for summary judgment that its phones do not infringe the 728 patent is GRANTED. GTE's motion for summary judgment that the Qualcomm phones infringe the 728 patent is hereby DENIED. All other motions pending before the Court are DENIED as moot.

IT IS SO ORDERED.

S.D.Cal.,2002.
GTE Wireless, Inc. v. Qualcomm, Inc.

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